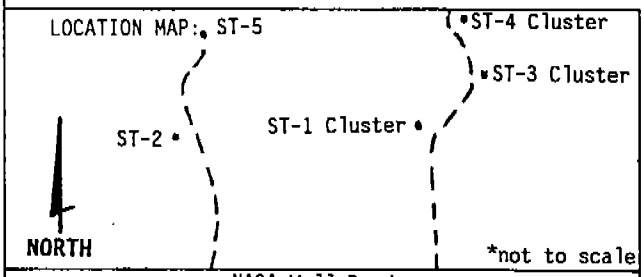
LITHOLOGIC LOG



SW 1/4 SE 1/4 NE 1/4 NW 1/4 S32 T20S R3E
NE

SITE ID: NASA-WSTF LOCATION ID: ST-4-589

SITE COORDINATES (ft.):

N 232223.95 E 400481.62

GROUND ELEVATION (ft. MSL): 4494.13' (BC)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary/Air Foam Rotary

DRILLING CONTR.: Larjon Drilling Co

DATE STARTED: 05/06/92 DATE COMPLETED: 05/21/92

FIELD REP.: M. Canavan, D. Menzie

COMMENTS: Mud rotary 0'-85'(12¼"). Ream to 16". 85' x 10" permanent steel surface casing. Air/foam rotary 85'-610' (9 7/8"). Total depth = 610'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5			Timed by driller	Cuttings 5' intervals 0'-610'	0'-610' Alluvium (Santa Fe Group): Samples range in color; moderate brown (5 YR 3/4) to light gray (N8). Cuttings range in size from 1.25 inches to less than 0.1 inches (clay and silt). Average cutting size is 0.1 inches. Cuttings are subrounded to angular. Subrounded cuttings are formation grains and comprise 20%-60% of samples. Subangular and angular cuttings include blocky formation clasts and chips broken during drilling. Alluvium is unconsolidated to moderately consolidated, poorly sorted, pebble to boulder polygenetic conglomerate. Intermittent clay and caliche layers noted. Alluvial clasts consist of dark gray (N3) to light olive gray (5 Y 5/2) micritic limestone, white (N9) iron-stained rhyolite, brownish black (5 YR 2/1) sandstone, moderate reddish brown (10 R 4/6) siltstone, light brownish gray (5 YR 6/1) andesite, white (N9) to light gray (N7) quartz, and light gray (N7) caliche. Minor amounts of tuff, granite, and quartzite. Andesitic fraction in cuttings increases with depth until alluvium becomes volcanic-rich (≥ 50% of sample) at 440'.
10			8		
15			11		
20			8		
25			27		
30			17		
35			9		0'-30' Cuttings are fairly uniform in size (averaging .10"-.25") and are angular to rounded.
40			31		30'-45' Gravel-size grains comprise 90% of non-clay cuttings and range from .5"-1.25" in size. They may be angular to rounded.
45			21		
50			18		
			25		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
50			25		50'-60' Cuttings similar to 0'-30' in size and sphericity.
55			29		
60			19		60'-70' Cuttings similar to 30'-45' in size and sphericity.
65			28		
70			33		
75			16		
80			29		
85			44 Start drillograph		85'-90' Sample 50% grout. 85' Color and consistency of foam discharge indicate that clay % may be higher than indicated by cuttings sample.
90			5		
95			5		
100			6		
105			10		
110			10		
115			8		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
115			8		
120			5		
125			5		
130			6		
135			9		
140			7		
145			6		
150			5		
155			5		
160			7		
165			22		
170			10.5		
175			3.5		
180			7		

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	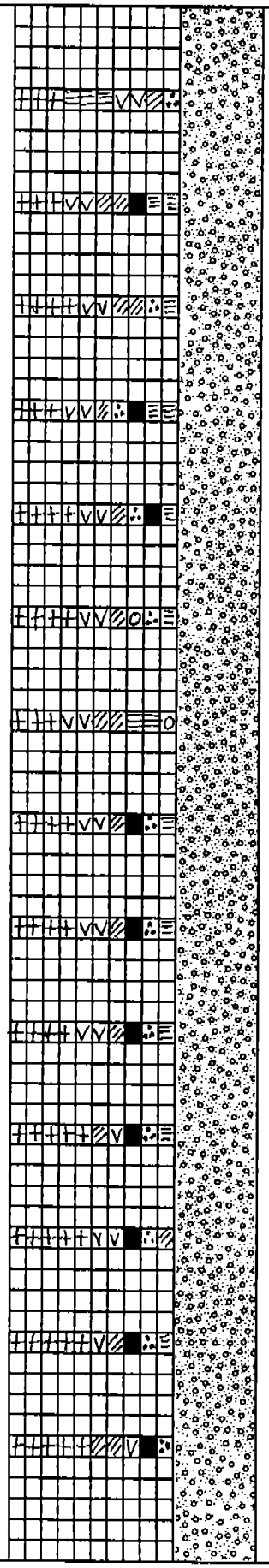			Cuttings (cont'd)	
180			7		
185			6		
190			4		
195			4		
200			6		
205			8.5		
210			4.5	210'	Cuttings average .10"-.25" and are angular to rounded.
215			3.5		
220			4		
225			5		
230			4		
235			3		
240			7		
245			3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
245			3		
250			3		
255			3		
260			6		
265			6		
270			7		270'-280' Cuttings decrease to .05"-.10" in size. Caliche-cemented alluvium present in small percentages.
275			7		
280			4		
285			5		
290			5		
295			7		
300			8		300'-385' Cuttings range from .05"-.50". Most average .1". Shapes are angular to rounded.
305			8		
310			7		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
310			7		
315			5		
320			9		
325			10		
330			7		
335			7		
340			8		
345			8		
350			9		
355			7		
360			7		360'-365' Small percentage (2%) cemented alluvium clasts present.
365			6		
370			8		
375			6		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
375			6		
380			8		
385			11		385'-395' Samples are a pea-gravel. Grains are uniform in size (.2"-.4") and are sub- to well-rounded.
390			8		
395			7		395'-405' "0" symbol represents carbonate-cemented alluvium. Cuttings are .1"-.5" in diameter and angular to rounded.
400			17		
405			9		405'-435' 10% calcite included in limestone percentage.
410			7		410'-415' First appearance of andesite in cuttings. Cuttings are finer, averaging .10" and angular to sub-rounded.
415			7		
420			7		
425			7		
430			5		
435			4		
440			6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
440			6		440'-610' Volcanic-Rich Alluvium: increase in volcanics; predominantly andesite and rhyolite.
445			7		
450			6		
455			7.5		
460			3.5		
465			5		
470			5		
475			6.5		
480			5.5		
485			4		
490			3.5		
495			3.5		
500			4		
505			4		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
505			4		
510			4		
515			4.5		
520			4		
525			4.5		
530			3		
535			5		
540			8		
545			3.5		
550			10		
555			7		
560			9		
565			7		
570			6		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
570			6		
575			15		
580			8		
585			7		
590			7		
595			6.5		
600			14.5		
605			8		
610			6.5		610' = Total Depth by drillograph
615					
620					
625					
630					
635					